

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (canceled).

2. (canceled).

3. (currently amended): A method of controlling a flow of a fluid in a microchannel in which at least a part of a surface of the microchannel is a hydrophilization portion comprised of a substance being capable of decreasing a contact angle of water by irradiation of light; said method comprises:

(1) irradiating the hydrophilization portion with light to decrease a contact angle of water of the surface thereof,

(2) releasing a substance for increasing a contact angle of water from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the hydrophilization portion subjected to decreasing of a contact angle of water, ~~and~~

(3) bringing the released substance for increasing a contact angle of water into contact with the surface of the hydrophilization portion to adhere the substance for increasing a contact angle of water to the surface of the hydrophilization portion, thereby increasing the contact angle of water of the surface,

(4) irradiation of light on the hydrophilization portion to which the substance for increasing a contact angle of water was adhered, to decrease the contact angle of water on the surface of the hydrophilization portion again, and

repeating said (2) to (4) to switch alternately a passage of a fluid in the microchannel.

4. - 7. (canceled).

8. (previously presented): The method of claim 3, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is irradiation of light or heating.

9. (canceled).

10. (canceled).

11. (previously presented): The method of claim 3, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle of water alone or is a liquid or solid containing the substance for increasing a contact angle of water.

12. (previously presented): The method of claim 3, wherein the material for controlling a contact angle of water is polydimethylsiloxane containing the substance for increasing a contact angle of water.

13. (previously presented): The method of claim 3, wherein the substance for increasing a contact angle of water is an organosilicon compound.

14. (previously presented): The method of claim 3, wherein the portion other than the hydrophilization portion in the microchannel is made of the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water.

15. (canceled).

16. (previously presented): The method of claim 3, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively applying light or heat on a specific region of the material for controlling a contact angle of water through a shielding pattern.

17. - 26. (canceled).

27. (previously presented): The method of Claim 3, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is a substance having a photocatalytic action.

28. (previously presented): The method of Claim 3, wherein the substance being capable of decreasing a contact angle of water by irradiation of light is titanium oxide.

29. (previously presented): The method of Claim 3, wherein a light source is a laser generator, an ultraviolet lamp or a mercury lamp.

30. (previously presented): The method of Claim 3, wherein the method of light irradiation is an irradiation method being capable of changing a focus in the depth direction.

31. (previously presented): The method of Claim 3, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively irradiating a specific region of the hydrophilization portion with light through a light-shielding pattern.

32. (canceled).

33. (canceled).

34. (canceled).

35. (canceled).